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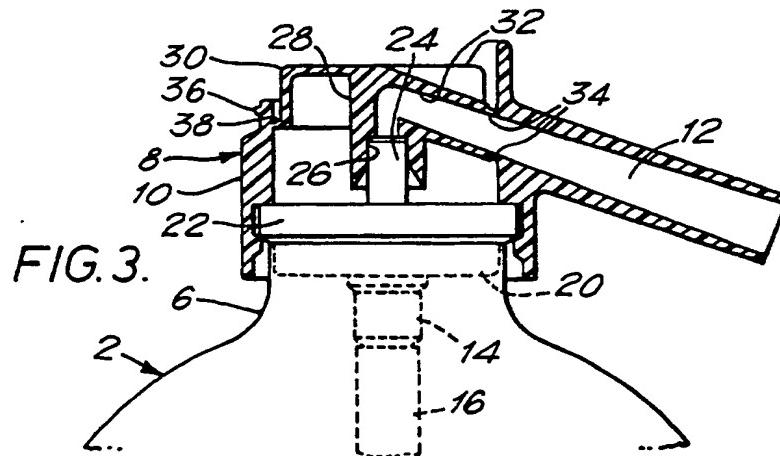
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### (54) Container for dispensing carbonated liquids.

(57) A container, such as a soda siphon, comprises a vessel (2) of blow-moulded plastics material, such as PET. A valve assembly (20), similar to those commonly used with aerosol containers, is received in a neck (6) of the vessel (2). A dispensing head (8) is fitted to the neck (6) over the valve assembly (20). The head (8) has an actuator element (30) which fits over an outlet tube (24) of the valve assembly (20). The actuator element (30) is hinged (at 34) to the rest of the dispensing head (8) and has a passageway (32) which communicates with an outlet nozzle

(12). Depression of the actuator element (30) causes the valve to open, and the carbonated liquid flows through the outlet tube (24), the passageway (32) and the outlet nozzle (12). The construction of the container means that its components can be made economically, so that at least the vessel (2) and the valve assembly (28) (and possibly also the dispensing head (8)) may be disposable when the contents have been used.



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## CONTAINER FOR DISPENSING CARBONATED LIQUIDS

This invention relates to containers for dispensing carbonated liquids and is particularly, although not exclusively, concerned with soda siphons and similar dispensers for carbonated soft drinks.

Conventionally, heavy glass bottles have been employed for use as soda siphons, in order to withstand the high internal pressures (up to approximately ten atmospheres) which are used. However, more recently, it has been proposed, for example in EP-A-0164218, that blow-moulded plastics containers, for example of polyethyleneterephthalate (PET) could be used. Thus EP-A-0164218 discloses a container for dispensing carbonated liquids, the container comprising a vessel which is formed by blow-moulding a plastics material and which has a neck receiving a valve assembly, the valve assembly having an outlet and an operating element which is axially displaceable to open the valve for flow through the valve outlet, a dispensing head being mounted on the neck, the dispensing head having an outlet nozzle communicating with the valve outlet, and having an actuator element which is manually operable to displace the valve operating element to open the valve.

However, both conventional soda siphons and those proposed in EP-A-0164218 employ relatively complex valve mechanisms for dispensing the contents, and consequently the overall cost of the container remains somewhat high. The result of this is that it is somewhat uneconomic to produce a wholly disposable soda siphon. Instead, the valve mechanism, and possibly also the bottle, has to be reusable.

According to the present invention, the actuator element has a passageway providing communication between the interior of the vessel and the outlet nozzle when the valve is open.

The valve assembly may, for example, comprise a valve of the type commonly used in aerosol dispensers, in which the operating member is in the form of an outlet tube which is closed at its lower end and has one or more holes in its side wall which holes are normally closed by an elastomeric sealing element surrounding the tube. When the outlet tube is depressed, the holes in the side wall are opened to the interior of the vessel, and the contents can flow into the outlet tube to be dispensed.

In an alternative embodiment, the operating element may be a closure member disposed within the body of the valve, the actuating element extending through an opening in the valve body to engage the closure member.

In a preferred embodiment, the valve assembly has a metal flange which is crimped to the neck of

the vessel, for example over a bead formed at the neck. The dispensing head may be a snap fit over the valve assembly, for example over the crimped part of the flange. The passageway may be provided in a hollow projection of the actuator element, which projection engages the valve operating element. Thus, when the actuator element is depressed, the operating element is also depressed so as to open the valve and allow the contents of the vessel to flow to the outlet nozzle. The actuator element is preferably hinged to the rest of the head, for example by means of a hinge situated at the junction between the passage in the actuator element and the outlet nozzle. The actuator element may initially also be connected to the rest of the head by a breakable bridge, which resists accidental operation of the valve before the container reaches the end consumer, and also provides an indication of tampering.

A cap may be provided on the dispensing head, for protecting the actuator element during transport and retail display of the container, and possibly also at times when the container is not being used to dispense liquid.

For a better understanding of the present invention and to show how it may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:

Figure 1 is a side view of a soda siphon;  
 Figure 2 is a top view of the soda siphon of Figure 1 with a dust cap removed;  
 Figure 3 is a partial sectional view of a dispensing head of the soda siphon, again with the dust cap removed; and  
 Figure 4 shows an alternative embodiment of the dispensing head.

The soda siphon of Figure 1 comprises a vessel in the form of a bottle 2 formed from PET by blow-moulding. As a result of the blow-moulding process, the lower region of the bottle 2 is hemispherical, and so a base cup 4 is provided to enable the soda siphon to stand upright. At the top, the bottle 2 is formed into a neck 6, and this neck is provided with a dispensing head 8. The dispensing head 8 will be described in more detail with reference to Figure 3, but, as shown in Figure 1, it comprises a main body in the form of a skirt 10 from which projects an outlet nozzle 12.

The dispensing head 8 partially encloses a valve assembly having an inlet spigot 14 to which is connected a dip tube 16 extending to the bottom of the bottle 2.

The dispensing head 8 is provided with a snap-on cap 18.

Referring to Figures 2 and 3 it can be seen

that the valve assembly 20 fits within the neck 6 of the bottle 2, and has a flange 22 which is crimped over a bead formed at the mouth of the bottle. The valve has an outlet tube 24. The valve assembly 20 is of the type commonly used in aerosol dispensers, although it needs to be modified in order to accept the relatively large flow rates required of a soda siphon. More specifically, the outlet tube 24 is provided with one or more holes in its side wall which, when the valve is closed, are closed by an elastomeric sealing ring accommodated within the body of the valve assembly. By depressing the outlet tube 24, the hole or holes in the outlet tube move away from the sealing ring, and allow liquid to flow up the dip tube 16, through the hole or holes into the outlet tube 24, to be dispensed from the outlet nozzle 12.

The outlet tube 24 fits within a bore 26 formed in a projecting portion 28 of an actuator element 30 of the dispensing head 8. The bore 26 communicates with a passage 32 which, in turn, communicates with the interior of the outlet nozzle 12. The passage 32 and the interior of the outlet nozzle 12 have divergent walls to enable the carbonated contents of the bottle 2 to expand as they are dispensed.

Although the interior of the nozzle 12 is shown as being smoothly divergent, the variation in cross-section may occur in a stepped manner.

At the position 34 where the passage 32 adjoins the skirt 10, and consequently the outlet nozzle 12, the wall of the passage 32 is necked to provide a hinge so that the actuator element 30, including the projection 28, can be depressed manually relatively to the skirt 10 and the outlet nozzle 12.

As shown in Figure 3, a bead 36 runs partially around the top of the skirt 10. This is for securing the cap 18.

In use, the bottle 2 will contain a carbonated drink, such as soda water. The cap 18 will be fitted after the soda siphon has been filled, in order to protect the actuator element 30 from contamination. It also supplements the breakable bridge 38 in avoiding accidental operation of the actuator element 30. The cap will remain on the soda siphon during transport and retail display, but will be removed by the purchaser before first use of the soda siphon.

Upon first use, the user will need to exert enough pressure on the actuator element 30 to break the bridge 38 so as to allow the actuator element 30 to be depressed. This, in turn, will depress the outlet tube 34 of the valve 20, allowing the contents of the soda siphon to be discharged through the outlet nozzle 12. The drop in pressure as the soda water expands during its travel through the outlet nozzle 12 to the ambient surroundings

will cause bubbles of carbon dioxide to form, so giving the soda water its characteristic sparkling quality.

The dispensing head 8, including the skirt 10, the outlet nozzle 12 and the actuator element 30, is constructed as a one-piece moulding from plastics material. Also, because the valve 20 is of a conventional design (albeit slightly modified), it can be manufactured in large quantities at low cost. The entire soda siphon can thus be manufactured at an economic cost so as to be disposable in its entirety when the contents are finished.

In the embodiment shown in Figure 4, the actuator element 30 is formed with a lever 40 which is depressed by the user to discharge the contents. The lever 30 is initially connected to a top wall 42 of the dispensing head 8 by a breakable bridge 38. Upon first use of the soda siphon, the bridge 38 is torn away by the user. In other respects, the embodiment of Figure 4 is generally similar to that of Figures 1 to 3.

In the embodiments described, the contents of the container is a carbonated drink, and the carbon dioxide in such liquids serves to pressurise the container to dispense the contents. Alternatively, other pressurizing agents, such as nitrogen may be used. Thus, the container may be used for dispensing fluids other than carbonated drinks, for example cream, yoghurt and other viscous or semi-viscous substances.

### Claims

35. 1. A container for dispensing carbonated liquids, the container comprising a vessel (2) which is formed by blow-moulding a plastics material and which has a neck (6) receiving a valve assembly (20), the valve assembly (20) having an outlet and an operating element (24) which is axially displaceable to open the valve for flow through the valve outlet, a dispensing head (8) being mounted on the neck (6), the dispensing head having an outlet nozzle (12) communicating with the valve outlet, and having an actuator element (28) which is manually operable to displace the valve operating element (24) to open the valve, characterized in that the actuator element (30) has a passageway (32) providing communication between the interior of the vessel (2) and the outlet nozzle (12) when the valve is open.
40. 2. A container as claimed in claim 1, characterized in that the operating element (24) is in the form of an outlet tube, the interior of which constitutes the valve outlet.
45. 3. A container as claimed in claim 2, characterized in that the outlet tube (24) is received within the passageway (32) in the actuator element (30).

4. A container as claimed in any one of the preceding claims, characterized in that the valve assembly (20) comprises a metal flange (22) which is crimped to the neck (6) of the vessel (2).

5. A container as claimed in any one of the preceding claims, characterized in that the dispensing head (8) is a snap fit over the neck (6) of the vessel (2).

6. A container as claimed in any one of the preceding claims, characterized in that the actuator element (30) is hinged to the outlet nozzle (12).

7. A container as claimed in any one of the preceding claims, characterized in that the dispensing head (8) comprises a main body (10), the outlet nozzle (12) projecting outwardly of the main body (10), and the actuator element (30) being hinged to the main body (10) in the region (34) of the junction between the passageway (32) in the actuator element (30) and the outlet nozzle (12).

8. A container as claimed in claim 7, characterized in that the hinge is defined by a narrowed region (34) of the material of the dispensing head (8).

9. A container as claimed in claim 7 or 8, characterized in that the actuator element (30) is initially connected to the main body by a breakable bridge (38).

10. A container as claimed in any one of the preceding claims, characterized in that the dispensing head (8) is a one-piece moulding.

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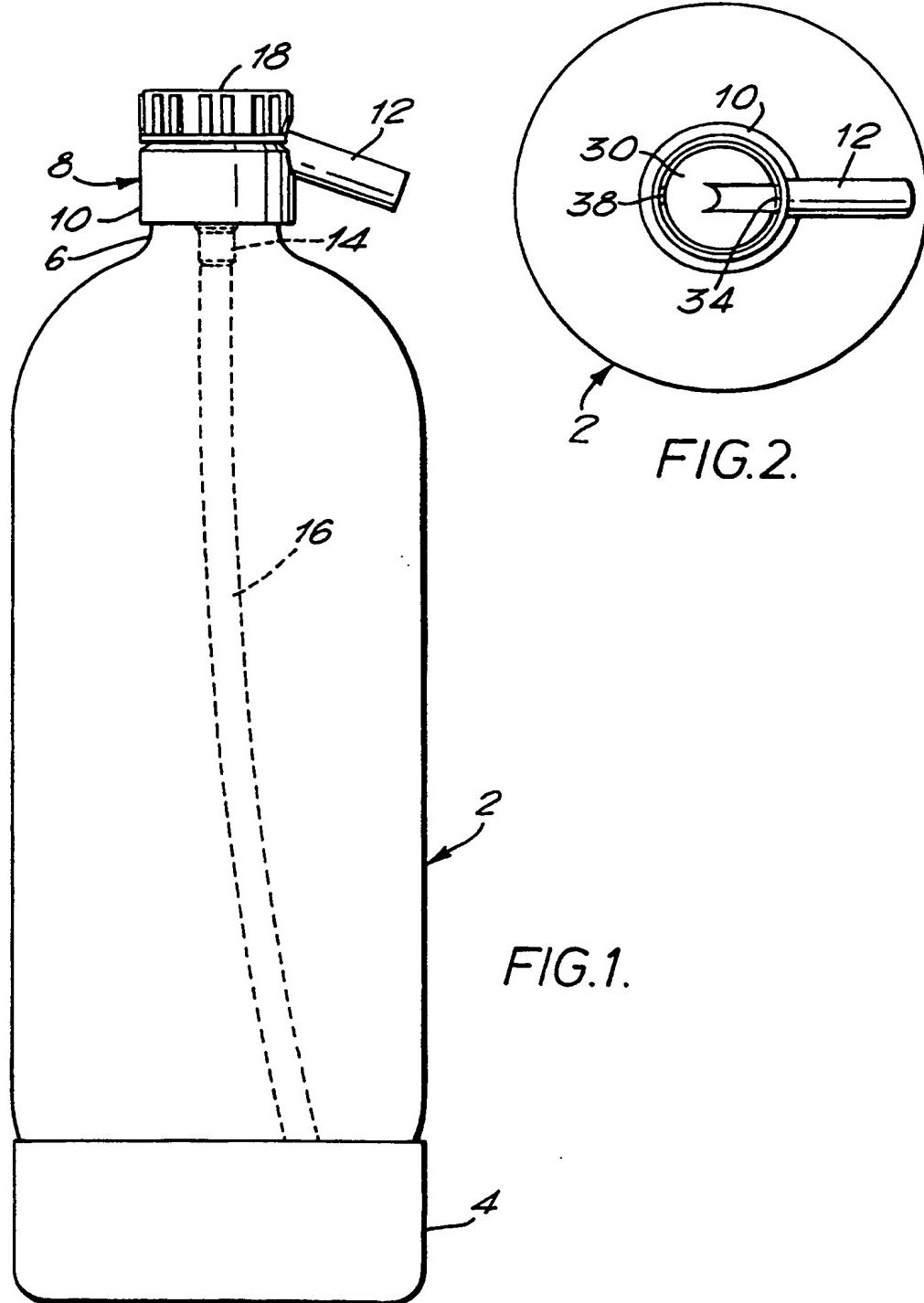
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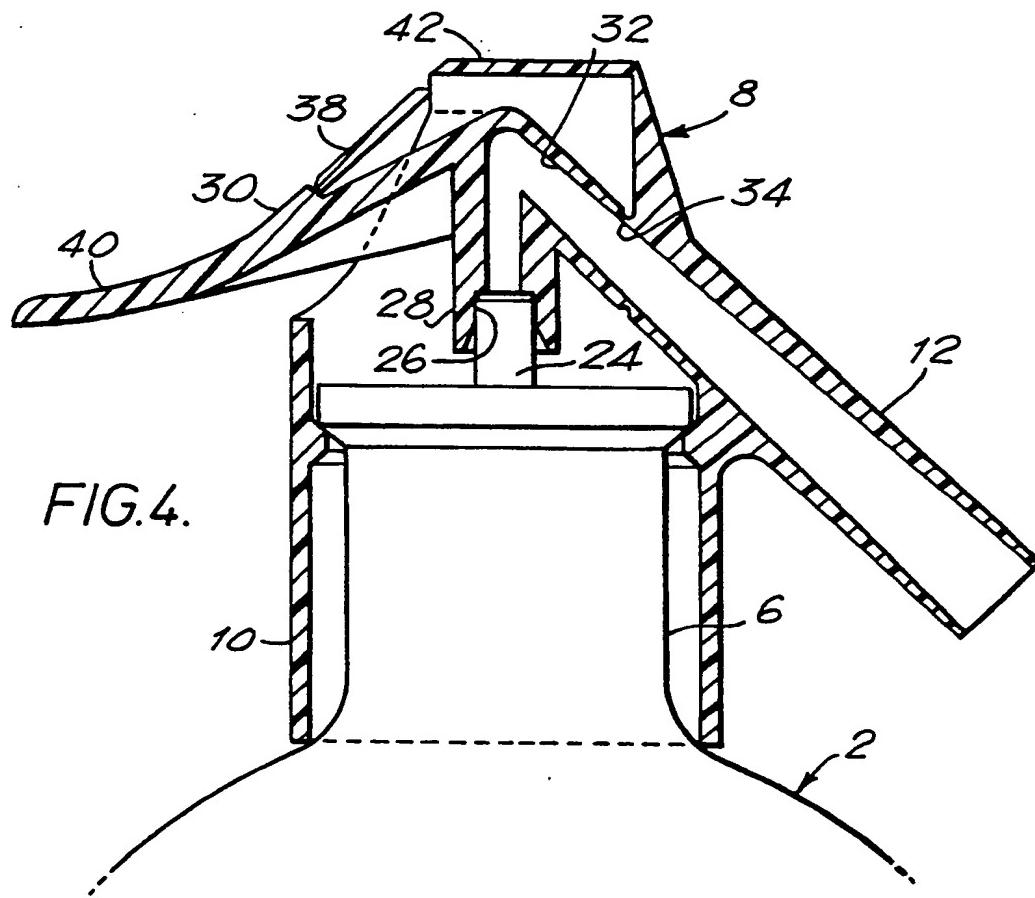
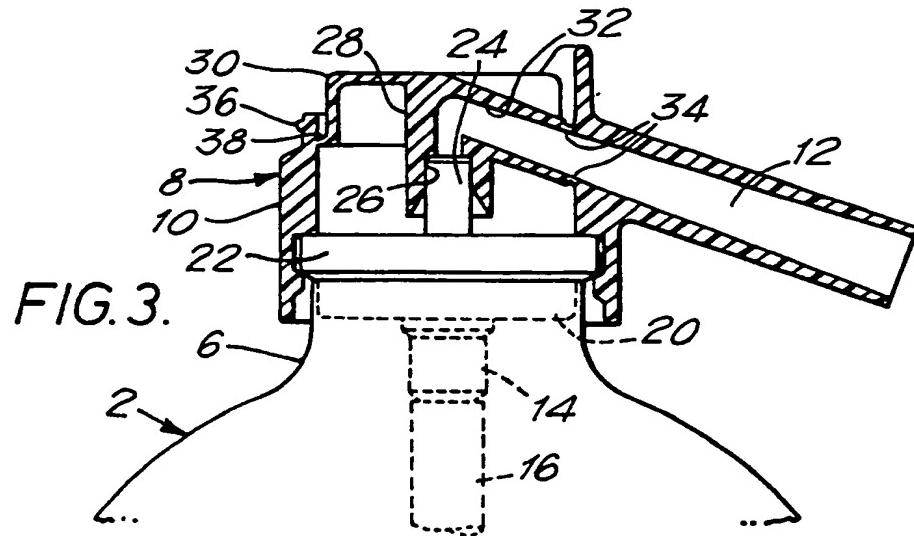
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EUROPEAN SEARCH  
REPORT

Application Number

EP 90 31 0446

DOCUMENTS CONSIDERED TO BE RELEVANT								
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)					
Y	FR-A-2 527 562 (DESTRADIS) * Figures 1,2; page 5, line 3 - page 6, line 30 *	1-5,10	B 67 D 1/04 B 65 D 83/14					
Y	WO-A-8 908 062 (VOLLMERHAUS et al.) * Figures 1,2; claim 1 *	1-5,10						
A	EP-A-0 244 293 (GONCALVES)							
A	DE-C-1 529 69 (KRUG et al.)							
D,A	EP-A-0 164 218 (HAGAN)							
The present search report has been drawn up for all claims								
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The Hague	30 November 90	DEUTSCH J.P.M.						
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